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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/006,876

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James F. Stevens

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38393

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01/27/2010

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EXAMINER

DUONG, THANH P

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/006,876	<b>Applicant(s)</b> STEVENS ET AL.	
	<b>Examiner</b> TOM P. DUONG	<b>Art Unit</b> 1797	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12, 14-18 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-12, 14-18 and 20-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 11, 2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 9-12, 14-18, and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (6,024,774).

Regarding claims 9, 11-12, 14, 16, 18, and 20, Nakagawa discloses an apparatus for selectively reducing carbon monoxide content (Col. 2, lines 45-60 and Col. 4, lines 47-57) of a hydrogen rich gas (Col. 5, lines 10-15), comprising: an oxidation reactor (1) having a catalyst bed; a catalyst bed containing an oxidation catalyst (Col. 3, lines 45-62 and Col. 3, lines 8-20); a porous tube (4) positioned substantially within a catalyst bed for distributing raw material gas (carbon monoxide and water vapor) throughout the catalyst bed; and a cooling jacket (7) for maintaining the reactor

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operating temperature (Fig. 1); and the porous tube is an alumina tube (Col. 7, lines 60-63). Note, Nakagawa discloses an oxidation reactor (1) of a carbon monoxide reactor (Col. 3, lines 45-62) and the reactor (1) acts as a fuel processor for generating hydrogen fuel as the main product gas (Col. 4, lines 47-60).

The limitation with respect to "a cooling jacket containing a circulating coolant for maintaining the oxidation reactor operating temperature from about 90 - 180 °C" does not further recite structural limitations for the features of the device and such limitation is directed to a manner of operating disclosed device, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP 2114 and 2115. Note, Nakagawa discloses that the apparatus is operating at a much higher temperature range (Col. 1, lines 50-57) than the claimed invention; thus, one of ordinary skill would have expected the apparatus of Nakagawa is capable of operating within the temperature range of the claimed invention.

The recitation of "a cooling jacket containing a circulating coolant" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

Regarding claims 10 and 17, Nakagawa discloses the porous tube is made of ceramic materials or heat resisting metal (Col. 4, lines 1-5) but is silent with respect to the porous tube is made of stainless steel material. In view of Nakagawa, it would have been obvious matter of design choice to one having ordinary skill in the art to select

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stainless material as the material of construction for the porous tube to provide a tube with improved heat and corrosion resistance since the selection of a known material based on its suitability for its intended use supported a prima facie obviousness. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Regarding claims 15 and 21, Nakagawa discloses the use of a cooling circulating pipe 7 with cooling means to control the reaction temperature but is silent with respect to the type of coolant. It would have been obvious in view of Nakagawa to one having ordinary skill in the art to use any conventional coolant means such as water, steam, and other coolants to control the temperature of the reactor to obtain a high purity of hydrogen. The recitation of "the circulating coolant is selected from the group consisting of water, steam, air, and hydrocarbon fuel" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

2. Claims 9, 12, 15, 16, 21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clawson et al. (6,641,625). Clawson discloses apparatus for selectively reducing carbon monoxide content (Col. 14, lines 31- Col. 15, line 7) of a hydrogen rich gas (Col. 14, lines 31-35), comprising: an oxidation reactor (13) having a catalyst bed (95); a catalyst bed (95) containing an oxidation catalyst (Col. 15, lines 4-7); a porous tube (92) positioned substantially within a catalyst bed (95) for distributing raw material gas throughout the catalyst bed; and a cooling jacket (97) for maintaining

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the reactor operating temperature (Fig. 1). Note, Clawson discloses an oxidation reactor (13) of a carbon monoxide reactor (Col. 14, lines 31- Col. 15, line 61 ) and the reactor (13) acts as a fuel processor for generating hydrogen fuel (hydrogen-rich reformat).

The limitation with respect to "a cooling jacket containing a coolant jacket for maintaining the oxidation reactor operating temperature from about 90 - 180 °C" does not further recite structural limitations for the features of the device and such limitation is directed to a manner of operating disclosed device, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP 2114 and 2115.

The recitation of "a cooling jacket containing a circulating coolant" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

Regarding claims 15 and 21, Clawson discloses the use of a cooling jacket of a tube 97 containing water and/or steam. The recitation of "the circulating coolant is selected from the group consisting of water, steam, air, and hydrocarbon fuel" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969). In addition, the use of a circulating coolant in a cooling jacket is well-known and conventional in the art in order to control the temperature of the reactor to obtain a high purity of hydrogen

***Response to Arguments***

Applicant's arguments filed January 11, 2010 have been fully considered but they are not persuasive.

(1) Applicants argued that "the specifications and the figures illustrate Nakagawa does not disclose the "cooling jacket containing a circulating coolant" of the present invention."

Examiner respectfully disagrees. The recitation of "a cooling jacket containing a circulating coolant" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969). In addition, the use of a circulating coolant in a cooling jacket is well-known and conventional in the art in order to control the temperature of the reactor to obtain a high purity of hydrogen.

(2) Applicants argued that "the specifications and the figures illustrate Clawson does not disclose the "cooling jacket containing a circulating coolant" of the present invention."

Examiner respectfully disagrees. Clawson discloses a cooling jacket of tube 97 containing water and/or steam of the present invention. In addition, the use of a circulating coolant in a cooling jacket is well-known and conventional in the art in order to control the temperature of the reactor to obtain a high purity of hydrogen.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOM P. DUONG whose telephone number is (571)272-2794. The examiner can normally be reached on 8:00AM - 4:30PM (IFP).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tom P. Duong/  
Primary Examiner, Art Unit 1797